(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 292 632**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: 87830279.3

(51) Int. Cl.4: **D03C 3/24 , D03C 3/44**

(22) Date of filing: 17.07.87

(30) Priority: 29.05.87 IT 2072987

(43) Date of publication of application:
30.11.88 Bulletin 88/48

(84) Designated Contracting States:
AT BE CH DE ES FR GB LI NL

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(54) A Resilient tensioner device for a jaquard machine.

(57) A resilient tensioner device (1) for a Jaquard machine for the production of Jacquard weaves, comprises a sheath (2) the upper end of which is connected to an upper filiform element (3) which can be hooked onto the wires (4) of the Jacquard machine which are slidable in upper guide battens (6).

In the sheath (2) is housed a tension spring (15) operatively connected to a lower filiform element (16) projecting from the sheath (2) and provided at its free end with coupling means (20,21,22) for anchorage to a lower batten (18).

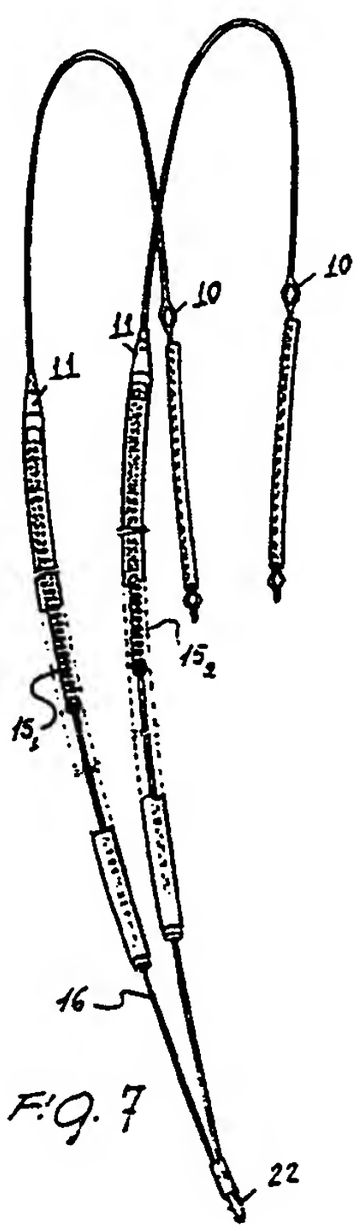

Fig. 7

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A resilient tensioner device for a Jacquard machine

The present invention relates to a resilient tensioner device which can be used in a Jacquard machine for the production of Jacquard weaves.

As is known, in Jacquard machines the wires or hooks which control the shedding of the warp threads are connected at their lower ends to suspended weights for applying a return movement to the vertical lifting movement of the hooks during working of the machine. However, with this type of arrangement there is in the first place a certain operating difficulty in that it not infrequently happens that the wires can become tangled together impeding the operation of the machine. Another disadvantage is constituted by the fact that the connection of the various suspended weights is very complex and there are usually many elements in motion at any one time.

The object of the present invention is to overcome the above indicated disadvantages by providing a resilient tension device which can be fitted to Jacquard machines in place of the conventional oscillating weights, which allows rectilinear reciprocating movement of the various wires to take place during the operation of the Jacquard machine.

According to the present invention, there is provided a resilient tensioner device for a Jacquard machine for the production of Jacquard weaves, characterised in that it comprises a sheath which is connected at its upper end to an upper filiform element having means for connecting it to a control wire slidable in an upper guide batten, a tension spring housed in the sheath and connected at its upper end thereto, and a lower filiform element connected to the lower end of the tension spring projecting from the sheath and provided at its free end with coupling means for anchorage to a lower batten of the Jacquard machine.

One advantage of the invention is that it provides a resilient tension device in which the variation of useful length can be achieved without causing possible obstruction by the accumulation of particles of yarn which inevitably become dispersed in the environment of the loom.

Another advantage of the resilient tension device of the invention is that, by its particular constructional characteristics, it is able to offer the widest guarantees of reliability and safety in use, and is easily obtainable using elements and materials which ar commonly commercially available and, therefor , is particularly competitive from the economic point of view.

Various embodiments of the invention will now be more particularly described, by way of example, with ref rence to th accompanying drawings, in which:

Figure 1 schematically illustrates the arrangement of a set of resilient tension devices in position on a Jacquard machine;

Figure 2 is a perspective view, of a resilient tension device formed as an embodiment of the invention with coupling means constituted by a hook;

Figure 3 is an axial section of the embodiment of Figure 2 with the spring shown at its natural or relaxed length;

Figure 4 is an axial section of the embodiment of Figures 2 and 3 with the spring shown under tension;

Figure 5 is a sectioned side view of the embodiment of Figures 2 to 4;

Figure 6 is a partially sectioned side view of a different embodiment of the invention with coupling means constituted by a slot;

Figure 7 is a partially sectioned side view of a further embodiment of the invention;

Figure 8 is an axial sectional view of a lower part of the resilient tension device of the invention;

Figure 9 is an axial sectional view of the upper part of the resilient tension device of the invention; and

Figure 10 is an axial sectional view of a detail of the invention.

Referring now to the drawings, the resilient tension device of the invention is intended for use on Jacquard machines for the production of Jacquard weaves; in Figure 1 a number of such devices are indicated generally with the reference numeral 1. The device illustrated in Figures 2 to 4 comprise a sheath 2 of substantially tubular shape made of plastics materials.

At its upper end the sheath 2 is connected to an upper filiform element 3 which is connectable to wires 4 connected to actuating hooks 5 and slidable in an upper guide batten 6 to effect the ordered positioning of the various wires to control the shedding of the warp yarn. The connection between the upper filiform element 3 and the associated wire 4 is achieved by means of a hook portion 8 which is closable by means of a tubular sleeve 9; the upper filiform element 3 also defines an eye 10 for th passage of the warp thread which is raised and lowered during working of the Jacquard machine.

The connection of the upper filiform element to the sheath 2 is shown in Figure 9. This is achieved by means of a coupling member 11 in which the lower end of the upper filiform element 3 is embedded and which defin s an attachment body 12 which fits into the end of the sheath 2.

From the attachment body 12 extends an axial tang 13 to which is fixed one end of a tension

spring 15 housed within the sheath 2. At its other end, the spring 15 is connected to a lower filiform element 16 which projects from the sheath 2 and is connectable to a lower anchoring batten generally indicated 18. The connection between the lower filiform element 16 and the spring 15 is illustrated in Figure 10. This comprises a series of coils 17 of smaller diameter than the main body of the spring, which engage with an enlargment 19 on the upper end of the filiform element 16.

In the embodiment of Figures 2,3,4 and 5 at the lower end the filiform element 16 is provided with a hook element 20. In other embodiments this may be replaced by a slot element 21, as illustrated in Figure 6, or, as indicated in Figure 7, there may be formed a loop 22 by doubling over the filiform element 16 so that this can be connected at each end to respective springs 15_1,15_2 of a double tension device.

At the lower end of the sheath 2 there is provided a scraper 30, which is connected to the lower end of the sheath 2 and which defines an axial hole 31 in which the lower filiform element 16 is slidable. The clearance between the hole 31 and the lower filiform element 16 is very small so that continuous scraping on the lower filiform element 16 takes place as it moves to and fro in the hole 31 thereby ensuring that no particles of yarn, dust or the like can accumulate within the sheath 2 creating a blockage which would impede the correct rectilinear reciprocating movement of the tension device.

In operation, as schematically indicated in Figures 3 and 4, the tension which is exerted by the wires 3 causes resilient elongation of the spring 14 as can be seen in Figure 4, with the subsequent resilient return to bring it back into the natural length or rest conditions illustrated in Figure 3 when the elongating tension is released. Because the spring 14 is housed within a sheath, with an arrangement which, in practice, allows the reciprocating movement of the sheath and the lower filiform element 16 to take place, and because of the provision of the scraper elements, it is possible to ensure that the device performs reliably to tension the jamming or clogging by the dust and yarn particles present in great number in the immediate environment in which the tensioner device moves.

Claims

1. A resilient tensioner device (1) for a Jacquard machine for th production of Jacquard weaves, characterised in that it compris s a sheath (2) which is connected at its upp r nd to an upp r filiform element (3) having means (8) for connecting it to a control wire (4) slidable in an upper guide batten (6), a tension spring (15) housed in the sheath and connected at its upper end thereto, and a lower filiform element (16) connected to the lower end of the tension spring (15), projecting from the sheath (2) and provided at its free end with coupling means (20,21,22) for anchorage to a lower batten (18) of the Jacquard machine.

2. A resilient tensioner device according to Claim 1, characterised in that the sheath (2), at its upper end, is connected to the upper filiform element (3) by means of a coupling comprising an engagement body (12) fitted into the upper end of the sheath (2) and having an axial tang (13) over which the upper end of the spring (15) is fitted.

3. A resilient tensioner device according to Claim 1 or Claim 2, characterised in that the lower filiform element (16) is provided at its upper end with an enlargement (19) engageable in a plurality of turns (17) of limited diameter defined at the lower end of the tension spring (15) for connecting the tension spring (15) to the lower filiform element (16).

4. A resilient tensioner device according to any of Claims 1 to 3, characterised in that the said coupling means (20,21,22) at the lower end of the lower filiform element (16) are constituted by a hook (20).

5. A resilient tensioner device according to any of Claims 1 to 3 characterised in that the coupling means (20,21,22) at the lower end of the lower filiform element (16) are constituted by an eye (21).

6. A resilient tensioner device according to any of Claims 1 to 3, characterised in that the coupling means (20,21,22) at the lower end of the lower filiform element (16) are constituted by a loop (22) formed by doubling over the lower filiform element (16) itself, and in that the lower filiform element (16) has two upper ends respectively connected to springs (15_1,15_2) housed in respective sheaths (2,22) to form a dual tensioner device.

7. A resilient tensioner device according to any preceding Claim, characterised in that it includ s scraper means (30) provided at the lower end of the sheath (2) and acting on the lower filiform element (16).

8. A resilient tensioner device according to Claim 7, characterised in that the scraper means (30) comprise a body housed at the lower end of the sheath (2) and having an axial hole (31) in which the lower filiform element (16) is slidably engaged.

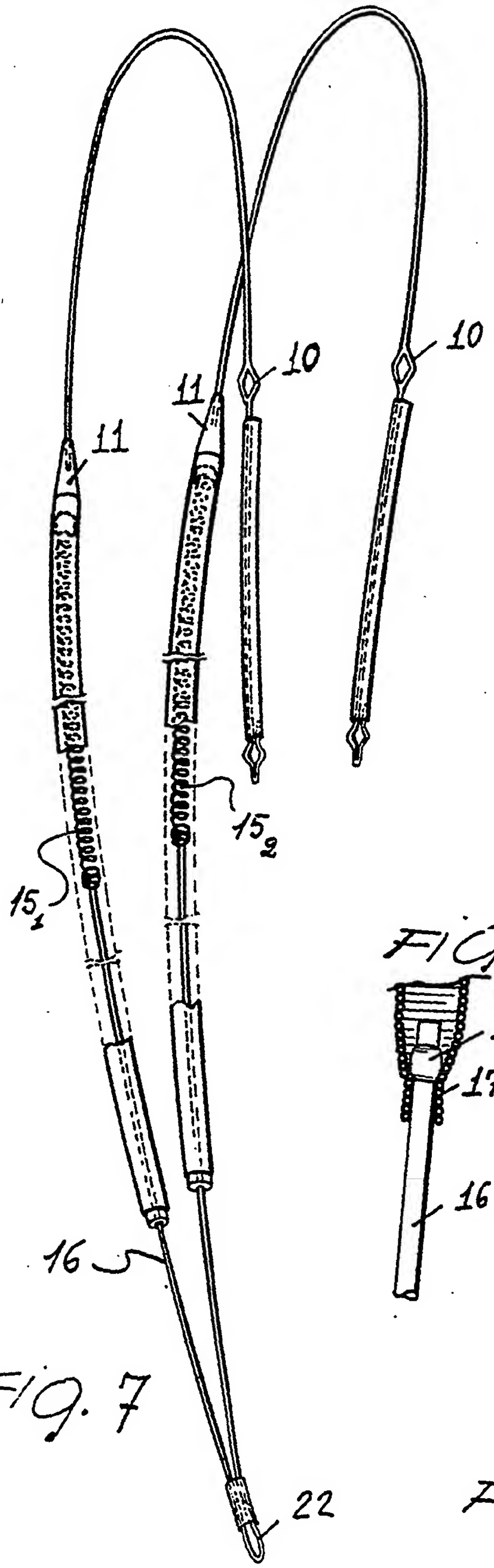

FIG. 7

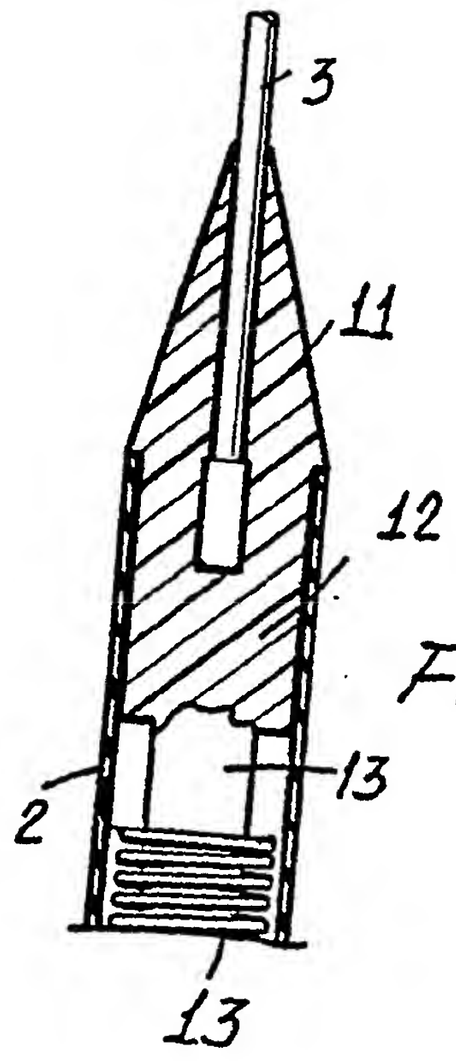

FIG. 9

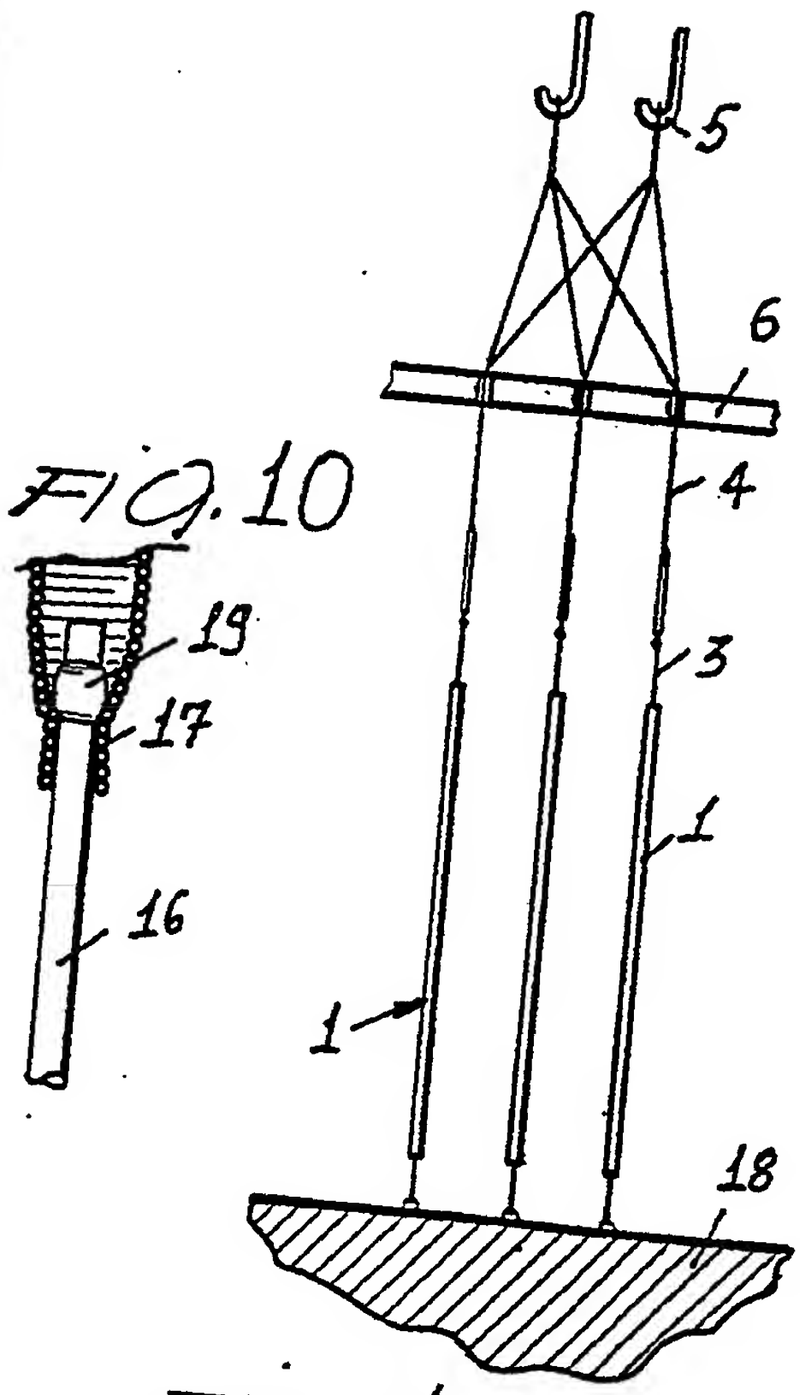

FIG. 10

FIG. 1

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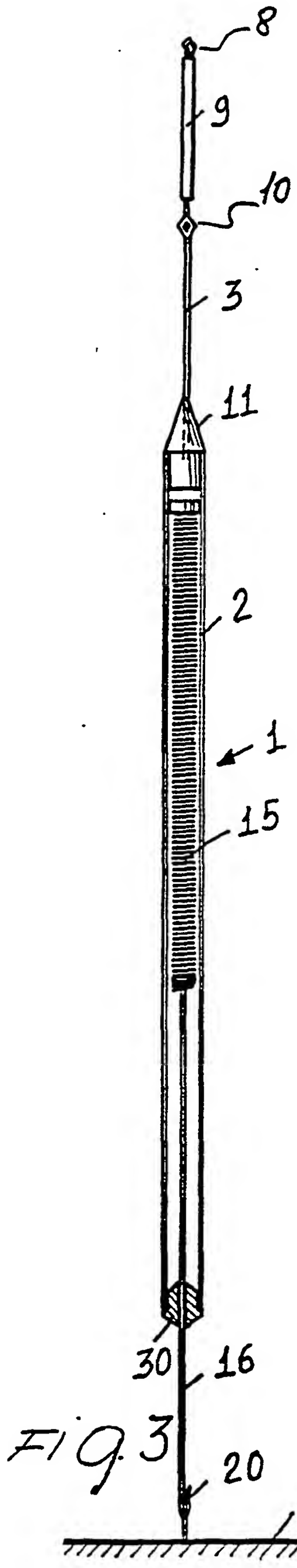

FIG. 3

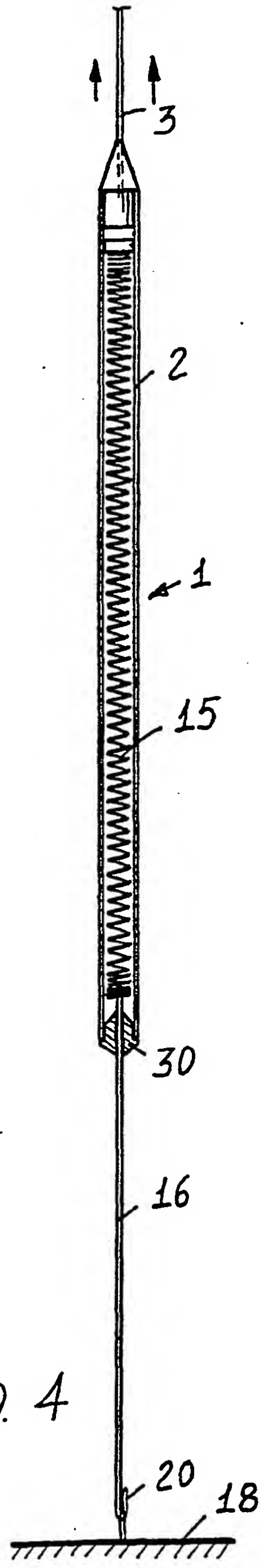

FIG. 4

FIG. 2

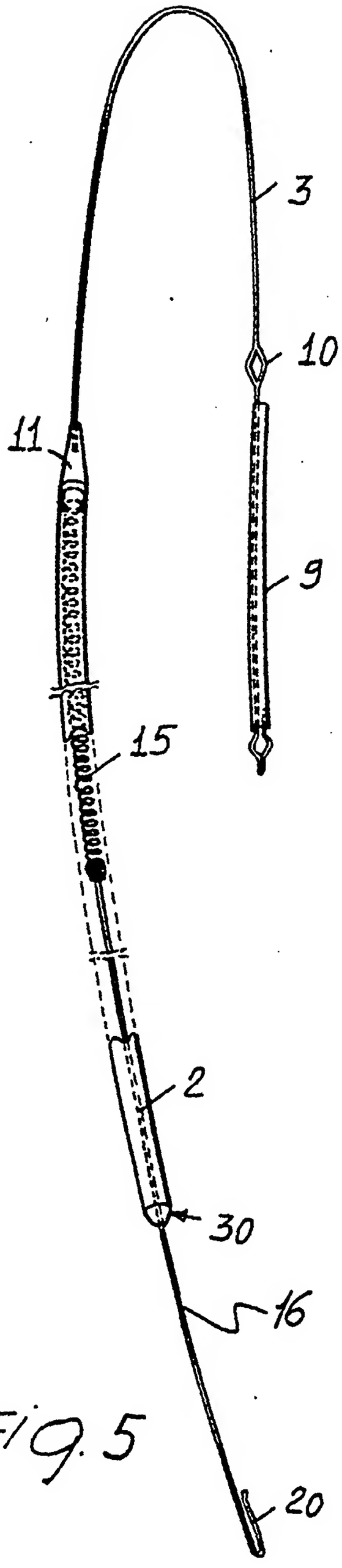

FIG. 5

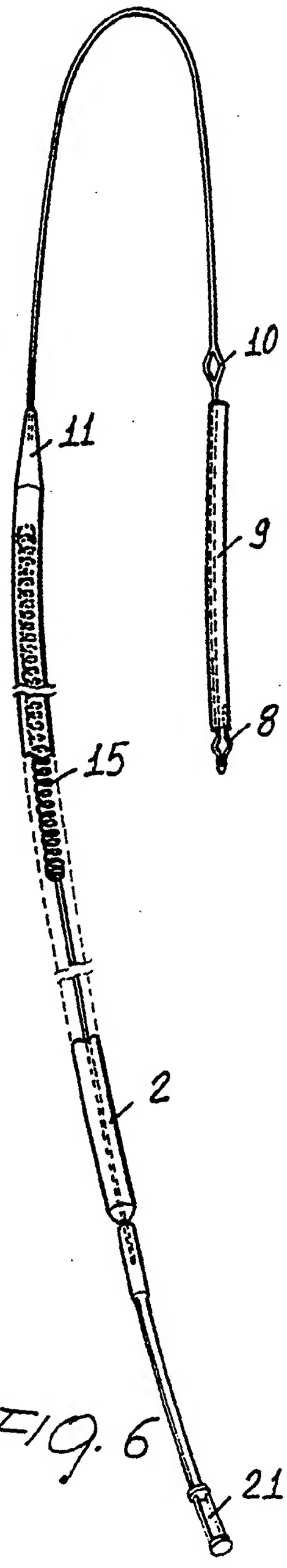

FIG. 6

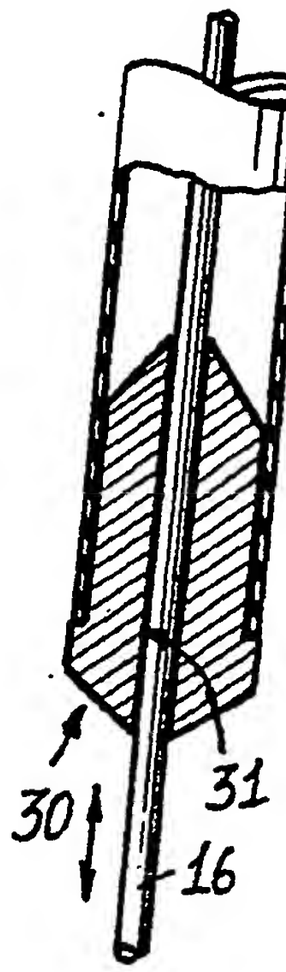

FIG. 8

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30.11.88 Bulletin 88/48

(84) Designated Contracting States:
AT BE CH DE ES FR GB LI NL

(88) Date of deferred publication of the search report:
31.01.90 Bulletin 90/05

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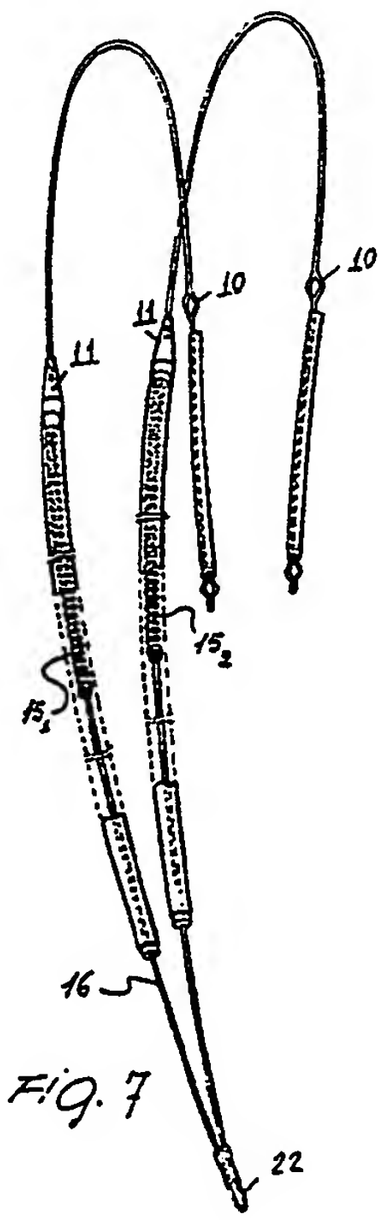

Fig. 7

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EUROPEAN SEARCH REPORT

Application number

EP 87830279.3

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl 4)
X	EP - A2 - 0 094 270 (RINET et al.) * Fig. 1 *	1,4	D 03 C 3/42 D 03 C 3/24 D 03 C 3/44
A	--	2	
A	DE - A1 - 2 828 140 (REMY WILMS) * Totality *	1,2,5	
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A	GB - A - 2 001 355 (VEB WIRKMASCH.) * Fig. 2 *	1,3	
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A	DE - A1 - 2 651 057 (SCHNITZLER & VOGEL)		
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A	DE - C - 291 001 (BUNDERMANN)		
	----		TECHNICAL FIELDS SEARCHED (Int. Cl 4)
			D 03 C 3/00

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
VIENNA	30-11-1989	BAUMANN

EPO Form 1503 03.82

CATEGORY OF CITED DOCUMENTS

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